Empowering Students Requiring Note-takers: An Innovative Assistive Technology Approach

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Abstract: A very common accommodation made for students with special needs is a note-taker. The Livescribe Pulse Smartpen is capable of recording over one hundred hours of lecture while simultaneously digitizing student handwriting and synchronizing the two. It has the potential to render old ways of note-taking obsolete. This poster presentation will introduce the participant to the PulseSmartpen and developer’s software that allows new applications to be created for use with it. The pilot study results from our initial integration of the Livescribe pen into a small set of undergraduate courses that previously used traditional note-takers will also be reviewed.

Keywords: Computer Assisted Instruction, Special Needs, Communication, Higher Education, Innovation, Computing

1. Background

A very common accommodation made for students with special needs, from mild to server, is a note-taker (Wyatt, 2008). In higher education, the note-taker is often another student in the class who, either by using carbon copy paper or regular paper that must subsequently be scanned on a copy machine, hand writes lecture notes. Although some variations of this process exist (i.e. paid assistants to transcribe the class similar to a court-reporting method), students often rely only on a classmate’s notes which are filtered through their own understanding of the material presented and may not provide full coverage either.

2. Problem

Students need accurate notes that can be easily referenced at a future date and universities want a low-cost solution to providing that service, but the two goals are often at odds. The Liberated Learning Project (LLP) addressed the first goal through the use of speech recognition software to digitize lecture notes in real time
on a monitor in front of the class. The subsequent study showed that students valued the transcript that was provided. Importantly, non-disabled students also used the transcript to supplement their own notes and valued the combination of auditory/visual learning (Bain, Basson, & Wald, 2002). However this approach has many barriers including the purchase of specialized software, the scheduling of a room with appropriate computer/microphone equipment, the training of professor’s voices, and the editing of the transcript for accuracy (Bain, Basson, & Wald, 2002).

3. Current Project

With this concern of note-taking accommodation issues, the authors sought to find a high-tech, low-cost solution that would create a better academic world for special needs students. In late 2008, the Livescribe Pulse Smartpen was released and has the potential to render old methods of note-taking largely obsolete. The pen is roughly the same size as a normal pen, but is capable of recording more than one hundred hours of lecture while simultaneously digitizing student handwriting. Special, but inexpensive, paper must be used to take the notes; the pen itself is around $150US. When the lecture is finished, the pen plugs into a USB port of a computer and creates a typed version of the notes along with the audio file. The key feature of the pen is that the electronic notes are linked to the audio so that a student can point to a place in the written document (in the physical notebook or on screen) and the audio will play from that point much like skipping to a specific chapter on a DVD. As an example, suppose a classmate is taking notes and doesn’t understand a particular lecture point – he/she could simply circle those notes and write check audio. Then, the student with a disability could immediately go to that point in the lecture to review the audio for themselves after class rather than try to scan through three hours of an audio tape (if one was created) to find that section. Informal tests showed a very high accuracy rate for the transcription of the handwritten (cursive) notes into the digital format regardless of the penmanship of the note-taker.

Thus, this poster presentation will first introduce the participant to the PulseSmartpen and developer’s software that allows new applications to be created for use with the Livescribe. The authors will showcase our progress on creating educational applications to support learning that go beyond the base-line function of note-taking. For example, the pen has a output one-line screen on its side that can be used to prompt the user for input. If key concept questions from a course or unit scroll, then the student would have to find the answer (i.e. What type of communication is email? Asynchronous).

Secondly, the poster will provide a look at the pilot study results from our initial integration of the Livescribe pen into a small set of undergraduate courses that previously used traditional note-takers for students referred from the Office of Disability Accomodations. Through a survey instrument, students (both the note-taker and the recipient) and faculty reported on their experiences using the pen.
References
